Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matters of	)	
	)	
Establishing the Digital Opportunity Data Collection	)	WC Docket No. 19-195
	)	
	)	
Modernizing the FCC Form 477 Data Program	)	WC Docket No. 11-10
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COMMENTS OF DEERE & COMPANY

Deere & Company ("Deere"), by its undersigned counsel, respectfully submits these comments to the Federal Communications Commission's ("Commission") Notice of Proposed Rulemaking to modernize and improve the broadband mapping data the Commission collects.[1] Deere has long contributed to the Commission's efforts to improve broadband mapping and continues to stress the importance of broadband to precision agriculture in the United States.[2] Deere takes this opportunity to offer specific comments regarding the Commission's Digital Opportunity Data Collection.

The Commission's proposed polygon mapping collection for fixed broadband seeks to collect geo-spatial information from carriers describing their service offerings at a particular speed in a particular geographic area.[3] The Commission directs the Office of Economics and Analytics ("OEA") to oversee the Universal Service Administrative Company ("USAC") and coordinate

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[1] *Establishing the Digital Opportunity Data Collection, et al.*, WC Docket Nos. 19-195, 11-10, Report and Order, Notice of Proposed Rulemaking, FCC 19-79 (2019) (*NPRM*).

[2] Deere Reply Comments to Modernizing the FCC Form 477, WC Docket No. 11-10, https://www.fcc.gov/ecfs/filing/10512218221470 (filed Oct. 24, 2017); Deere Reply Comments to Mobility Fund II, WC Docket No. 10-90, https://www.fcc.gov/ecfs/filing/10512218221470 (filed May 12, 2017); Deere Comments to Mobility Fund II, WC Docket No. 10-90, https://www.fcc.gov/ecfs/filing/1042658678534 (filed Apr. 26, 2017); Deere Letter to BDAC, GN Docket No. 17-83, https://www.fcc.gov/ecfs/filing/10414206224821 (filed Apr. 17, 2017); Deere Comments to the 2016 Section 706 Inquiry, GN Docket No. 16-245, https://www.fcc.gov/ecfs/filing/10811945618714 (filed Sept. 6, 2016).

[3] *NPRM*, at para. 12.

with the Wireline Competition Bureau ("WCB"), International Bureau ("IB"), and Wireless Telecommunications Bureau ("WTB") to implement the details and construct an online portal to receive the carrier-submitted polygons.[4] Collectively, the Commission's Bureaus and Office will be responsible for defining the technical parameters for the filings and instructing USAC on how to implement the new broadband map depicting the information for fixed broadband. The Commission recognizes that a number of issues remain outstanding in implementing the new information collection and directs the submission of a USAC report prior to implementing the polygon reporting.[5] The Commission also proposes a more accurate, reliable mobile broadband data collection, but has not adopted any specific information for the collection. Importantly, the Commission recognizes that a uniform national dataset of broadband serviceable locations needs to be implemented to truly understand where broadband coverage is available in the United States.[6] These broadband serviceable locations and the associated location-specific dataset will improve and inform the Commission's efforts to spur broadband deployment.[7]

Accordingly, Deere urges the Commission to incorporate agricultural lands into the definition of broadband serviceable locations. This action would serve the Commission's goal to foster broadband deployment in rural areas and would be consistent with the clear policy direction of Congress.[8] Further, the inclusion of agricultural lands needs to occur at the fundamental-level of the uniform location dataset and identify agricultural parcels as needing access to broadband service. Finally, the Commission must adopt specific radio frequency and geo-spatial mapping

[4] *Id.* at para. 15.

[5] *Id.* at para. 29.

[6] *Id.* at para. 30.

[7] *Id.* at para. 99.

[8] Agriculture Improvement Act of 2018, Pub. L. No. 115-334, § 12511(a), 132 Stat. 4490, 4993-94 (2018) (the "Precision Agriculture Connectivity Act" ("*PACA*")).

requirements for mobile broadband data reporting to ensure mobile broadband maps accurately depict coverage and access to meaningful broadband service.

I. Congress Directed the Commission to Consider Agricultural Lands on All Broadband Maps

Deere supports the use of smaller, more granular mapping areas, compared to census blocks, made possible through the use of carrier submitted polygons as contemplated by the Commission. The Commission's polygon mapping approach adopted for fixed broadband and proposed for mobile broadband will improve the granular data available to analyze where broadband service is and is not available; however, any definition of broadband serviceable locations incorporated into the uniform location dataset must include agricultural lands. Congress has directed the Commission to consider broadband access on agricultural lands.[9] Congress has recognized the need to "identify and measure current gaps in the availability of broadband Internet access service on agricultural land."[10] Accordingly, the Commission must take this opportunity to include agricultural land within the definition of broadband serviceable locations.

The Precision Agriculture Connectivity Act ("*PACA*") was included in the 2018 Farm Bill, where Congress found:

1) Precision agriculture technologies and practices allow farmers to significantly increase crop yields, eliminate overlap in operations, and reduce inputs such as seed, fertilizer, pesticides, water, and fuel.
2) These technologies allow farmers to collect data in real time about their fields, automate field management, and maximize resources.
3) Studies estimate that precision agriculture technologies can reduce agricultural operation costs by up to 25 dollars per acre and increase farm yields by up to 70 percent by 2050.
4) The critical cost savings and productivity benefits of precision agriculture cannot be realized without the availability of reliable broadband Internet access service delivered to the agricultural land of the United States.
5) The deployment of broadband Internet access service to unserved agricultural land is critical to the United States economy and to the continued leadership of the United States in global food production.
6) Despite the growing demand for broadband Internet access service on agricultural land,

[9] *PACA*, § 12511(a), 132 Stat. 4490, 4993-94.

[10] *Id.*, § 12511(b)(3)(A)(i), 132 Stat. 4993-94.

broadband Internet access service is not consistently available where needed for agricultural operations.

7) The Federal Communications Commission has an important role to play in the deployment of broadband Internet access service on unserved agricultural land to promote precision agriculture.[11]

At the time *PACA* was passed, the authors of the legislation, Congressmen Bob Latta and Dave Loebsack, recognized the critical importance that broadband access plays today and in the future in strengthening the United States' agricultural sector. Specifically, Congressman Latta recognized that "the agricultural community is at a disadvantage compared to other sectors because they are in rural areas that often have limited access to high-speed Internet. It's critical that the United States close the 'Digital Divide' to ensure that the agricultural community can fully utilize this cutting-edge technology."[12] Congressman Loebsack stressed "it is important that our farmers have access to the technology necessary to assist in planting and monitoring their crops."[13]

To achieve these goals, Congress directed the FCC to establish a Task Force, working with the Department of Agriculture ("USDA"), to:

i) identify and measure current gaps in the availability of broadband Internet access service on agricultural land;
ii) develop policy recommendations to promote the rapid, expanded deployment of broadband Internet access service on unserved agricultural land, with a goal of achieving reliable capabilities on 95 percent of agricultural land in the United States by 2025;
iii) promote effective policy and regulatory solutions that encourage the adoption of broadband Internet access service on farms and ranches and promote precision agriculture;
iv) recommend specific new rules or amendments to existing rules of the Commission that the Commission should issue to achieve the goals and purposes of the policy recommendations described in the second bullet in this list;
v) recommend specific steps that the Commission should take to obtain reliable and standardized data measurements of the availability of broadband Internet access service as may be necessary to target funding support, from future programs of the Commission dedicated to the deployment of broadband Internet access service, to unserved agricultural land in need of broadband Internet access service; and
vi) recommend specific steps that the Commission should consider to ensure that the expertise of the Secretary and available farm data are reflected in future programs of the Commission

[11] *Id*., § 12511(a), 132 Stat. 4490, 4993-94.

[12] Congressman Latta, *Press Releases "Latta-Authored Precision Agriculture Connectivity Act Included In Farm Bill"* https://latta.house.gov/news/documentsingle.aspx?DocumentID=398957 (Dec. 11, 2018).

[13] Congressman Loebsack, *Press Release "With Signing of Farm Bill, Loebsack and Latta's Precision Ag Bill to Become Law"* https://loebsack.house.gov/news/documentsingle.aspx?DocumentID=395211 (Dec. 20, 2018).

dedicated to the infrastructure deployment of broadband Internet access service and to direct available funding to unserved agricultural land where needed.[14]

II. The Commission's Broadband Maps, Especially Those For Mobile Broadband, Must Consider Service Availability on Agricultural Lands Within the Definition of Broadband Serviceable Locations

PACA requires identification of agricultural lands that lack access to broadband service.[15] Congressional intent clearly identified the importance of both fixed and mobile broadband deployment on agricultural lands.[16] Unquestionably, Congress intended the Commission to map coverage of broadband on agricultural lands.[17] It is critically important that the Commission have access to broadband mapping data that includes coverage for agricultural lands to carry out this Congressional directive. Further, for the purpose of precision agriculture use, mobile broadband is an essential technology and currently the Commission has no meaningful mobile broadband map to accurately determine coverage on agricultural lands.

To achieve this, the Commission must incorporate agricultural land parcels into any definition of broadband serviceable locations used to construct the uniform location dataset. Without this information included in the fundamental level of broadband mapping data, for instance in parcel identification, the Commission and the Task Force will not be able to accurately determine which agricultural lands lack access. This failure would be inconsistent

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[14] *PACA*, § 12511(b)(3)(A), 132 Stat. 4993-94; *see FCC Announces the Establishment of the Task Force for Reviewing Connectivity and Technology Needs of Precision Agriculture in the United States and Seeks Nominations for Membership*, Public Notice, DA 19-568, 1-2 (2019) (*PACA Nomination PN*).

[15] *PACA*, § 12511(b)(3)(A)(i), 132 Stat. 4993-94.

[16] PACA directs the Task Force to issue annual reports that address: A) the status of fixed and mobile broadband Internet access service coverage of agricultural land; B) the projected future connectivity needs of agricultural operations, farmers, and ranchers; and, C) the steps being taken to accurately measure the availability of broadband Internet access service on agricultural land and the limitations of current, as of the date of the report, measurement processes. *PACA*, § 12511(b)(5), 132 Stat. 4994-95; *PACA Nomination PN*, at 2.

[17] During the PACA Task Force nomination process, Chairman Pai has recognized the importance of the Task Force in responding to Senators Grassley, Ernst, Hartzel, Wicker, Moran, Cramer, Hoeven, Roberts, Tester, Blunt, Hawley, Round, Thune, Barrasso, Cheny, and Enzi and Congress members Meuser, LaMalfa, Thompson, Flores, Latta, Marshall, Estes, Watkins, Armstrong, Hice, Huffman, Graves, and Johnson. *See* FCC, *Chairman Pai's Letters to Congress*, https://www.fcc.gov/chairman-pais-letters-congress (last visited Sept. 23, 2019) (Letters regarding recommendations for the Precision Agricultural Task Force from July 29, 2019 until August 9, 2019).

with Congressional directive included in *PACA* and would not serve the Commission's overall public interest objective in fostering broadband deployment to the Nation's rural areas.

III. Current Proposals to Identify Broadband Serviceable Locations Would Eliminate Agricultural Lands from Consideration Leaving the Commission with No Data to Comply with Congressional Directive

The Commission seeks to overlay the service provider polygons on a map of "broadband serviceable locations," meaning the areas that should be served by broadband, and specifically seeks comment on how to define a "broadband serviceable location."[18] However, the Commission's discussion does not mention agricultural lands and references buildings and parcels, using examples only representing structures.[19] Further, the Commission even presupposes that agricultural structures like farmhouses, barns, chicken coops, storage sheds and garages should not be mapped as providers are likely to only run a single connection to a farm rather than all of the farm's structures.[20] The Commission's proposal focuses on residential and enterprise deployment to traditional examples of structures (*e.g.* homes and business offices). By eliminating identification of secondary structures important to precision agricultural efforts the Commission will create blind spots in the data that does not identify agricultural lands that lack broadband access. This problem is compounded when the focus is on individual structures and not a broader parcel definition that would include agricultural lands, such as the farmlands, croplands, and grasslands used in agricultural production. By not including agricultural structures and lands into the definition of broadband serviceable locations, the Commission will not be able to accurately assess broadband access on agricultural lands. Further, if the Commission does not incorporate agricultural lands at the beginning of the mapping effort, this oversight will tie the hands of the

[18] *NPRM*, at para. 99.

[19] *Id.* at paras. 100-102 (providing examples of locations such as houses, businesses, structures, apartment buildings).

[20] *Id.* at para. 101.

Task Force and result in significant waste of time and effort of the Task Force to reanalyze the broadband mapping data to comply with the annual reporting requirements of *PACA*. It is far more efficient and reasonable to include agricultural lands in the definition of broadband serviceable locations rather than requiring the Task Force to independently determine coverage.

The Broadband Mapping Pilot conducted by USTelecom with CostQuest illustrates how a failure to consider agricultural lands in the definition of broadband serviceable locations will lead to omission and blind spots in broadband coverage.[21] The Pilot did eliminate agricultural parcels and structures important to precision agriculture.[22] USTelecom conducted pilots in Missouri and Virginia to combine public and private information sources to map broadband serviceable locations, which USTelecom refers to as a broadband serviceable location fabric ("BSLF" or "Fabric"). USTelecom defines a serviceable location as "a building structure that currently has or potentially could require broadband service."[23] To produce the Fabric, USTelecom collected parcel data from public sources and tax assessors to categorize land use for parcel types that require/potentially require broadband. On top of the parcel data, USTelecom added structure overlays to identify building footprints. USTelecom then applied machine logic and visual inspection to identify serviceable locations.[24] The outcome produces the below locations:[25]

[21] *See* Letter from B. Lynn Follansbee, VP Law & Policy, USTelecom to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 19-195, 11-10, 10-90, 19-126, https://www.fcc.gov/ecfs/filing/1082010869365 (Aug. 20, 2019) (*USTelecom Mapping Pilot Report*).

[22] *Id.* at slide 28 (depicting only residential homes as broadband serviceable locations and specifically omitting the agricultural barns).

[23] *Id.* at slide 67.

[24] *Id.* at slides 25-28.

[25] *Id.* at slide 28.

USTelecom's approach will exclude farm and croplands from consideration in identifying areas that lack broadband coverage. As depicted, the circled, green triangles represent the Fabric locations that would be identified as needing broadband coverage. This leaves the larger agricultural land parcel unidentified, and further, explicitly leaves out the barns and other agricultural structures that Congress identified as needing access to broadband. This decision is being made in the initial parcel determination, even prior to considering whether secondary structures like barns or garages need broadband service. The identified locations focus largely on residential homes. While USTelecom notes structure logic for enterprise and multi-tenant housing (apartments/condos) will need to be established, it did not provide detail on how the pilot made these determinations.[26] The flawed approach of using a narrow definition of broadband serviceable

[26] *Id.* at slide 13; *see also* Letter from B. Lynn Follansbee, VP Law & Policy, USTelecom to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 19-195, 11-10, 10-90, 19-126, https://www.fcc.gov/ecfs/filing/1082289639176 (Aug. 23, 2019) (*USTelecom BSLF Imagery Review Flow Chart*) (Detailing the process to visually identify primary

locations would prevent the Commission from identifying the extent to which broadband service is lacking on agricultural lands. By adopting the USTelecom Fabric without requiring that agricultural lands be incorporated into the Fabric definition, the Commission would undoubtedly leave holes in the data and not accurately describe broadband coverage on agricultural lands.

IV. The Commission Must Adopt Specific Radio Frequency and Geo-Spatial Mapping Requirements for Mobile Broadband Data Reporting

Uniform propagation models are essential to accurately understanding where mobile broadband coverage is available. This is especially important for broadband access on agricultural lands that rely on wireless broadband for precision agriculture. It simply is not feasible or economically justifiable to provide broadband access to tractor operations or the vast croplands needing broadband access using fiber. The Commission correctly identifies that precise and uniform propagation models are required.[27] Further, a challenge process that supports "on the ground" testing data is necessary given the lessons learned from the one-time data collection in the Mobility Fund II proceeding.[28] Without a challenge process, the carrier-submitted data would not have been demonstrated to be unreliable and the Commission would have proceeded in allocating Universal Service funding without truly understanding where coverage was lacking.[29]

Deere continues to support -85 dBm RSSI (Relative Signal Strength Indicator) to accurately reveal areas where mobile broadband data service quality is insufficient.[30] Based on the experience of Deere's Machine Knowledge Center in mapping wireless broadband coverage on cropland and ranchland where John Deere machines operate, an -85 dBm measure can be used to

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structures and noting that secondary structures include "farm structures," garages, barns, quonset huts, greenhouses, etc.).

[27] *NPRM*, paras. 115-16.

[28] *Connect America Fund, Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, Order on Reconsideration and Second Report and Order, 32 FCC Rcd 6282, 6296, para. 28 (2017).

[29] News Release, FCC, FCC Launches Investigation Into Potential Violations of Mobility Fund Phase II Mapping Rules (Dec. 7, 2018), https://docs.fcc.gov/public/attachments/DOC-355447A1.pdf.

[30] *NPRM*, para. 114 *citing* Deere Reply at 2.

indicate a reliable signal for LTE data transfers (not voice signals) in the range of three to five miles from a cellular tower. Deere's data set shows that the incidence of reported successful connections drops when the equipment is more than five miles from the nearest cellular tower.

Deere continues to support a challenge process that allows for "on the ground" test data (via app or drive tests). The Mobility Fund II one-time information collection and resulting investigation demonstrates the importance of verifying provider submitted data.[31] Without a public challenge process, it would be nearly impossible to determine the accuracy of carrier submitted information due to the difficultly in assessing coverage. The variability among carrier methods of calculation and the large areas purportedly covered can only be accurately assessed through "on the ground" testing. Finally, to promote participation and candid disclosures, the Commission should allow the challenge data be submitted confidentially.

V. Conclusion

Deere remains supportive of the Commission's continued efforts to map broadband coverage in the United States and encourages consideration of the specific recommendations in these comments to accurately depict broadband access on agricultural lands.

Respectfully submitted,

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[31] News Release, FCC, FCC Launches Investigation Into Potential Violations of Mobility Fund Phase II Mapping Rules (Dec. 7, 2018), https://docs.fcc.gov/public/attachments/DOC-355447A1.pdf.